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Conferencias impartidas por investigadores visitantes procedentes de otras Instituciones y que tienen como objetivo mejorar la visibilidad del Centro.

CONFERENCIA

17 de Octubre de 2014. 12:00h. Sala de Conferencias del CENIM
Avda. Gregorio del Amo, 8. 28040 Madrid

Structural Integrity Assessment of Engineering Components Using Electromagnetic NDE Techniques

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Resumen

Microstructural changes and variation of residual stresses that occur during the extended period of service are the major cause of failure of critical engineering components. The conventional non-destructive Evaluation (NDE) techniques such as ultrasonic, radiography etc are suitable when the cracks are initiated and to determine critical crack size. Presently, in-situ metallography are used to determine microstructural degradation and XRD technique for residual stress evaluation. However, these techniques are time consuming, sometimes difficult to study in critical location and also expertise require for analysing the results. Thus attempts are being made to developed techniques based on the changes of physical properties due to degradation of microstructure and stress state of materials. As most of the engineering components are made of steel which are magnetic in nature, attempts are being made to find the change in magnetic properties with the microstructure and residual stress through electromagnetic techniques. Magnetic Hysteresis Loop (MHL) and Magnetic Barkhausen Emissions (MBE) are the two major techniques that can be utilised for evaluation of the microstructural degradation for Cr-Mo steel used as power plant high temperature components will be discussed in the presentation. Soft magnetic materials development activity at National Metallurgical Laboratory (NML) and the application of such materials for development of magnetic sensor for the structural integrity assessment of critical components of petrochemical industry will also be discussed.

Resumen disponible en **DIGITAL CSIC**

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